



# Zero-Emission Track-Miles Locomotive Project

The Port of Los Angeles has partnered with VeRail Technologies, Inc. to build and demonstrate a zero-emission switcher locomotive in the San Pedro Bay Ports. This project began as a concept for a near zero-emission natural gas system, and has now evolved into a fully zero-emission platform. This 2,100 horsepower six-axle switcher locomotive will operate throughout the network of in-harbor rail lines that service the Ports of Los Angeles and Long Beach, and is anticipated to be capable of working a full 12-hour shift before needing to charge.

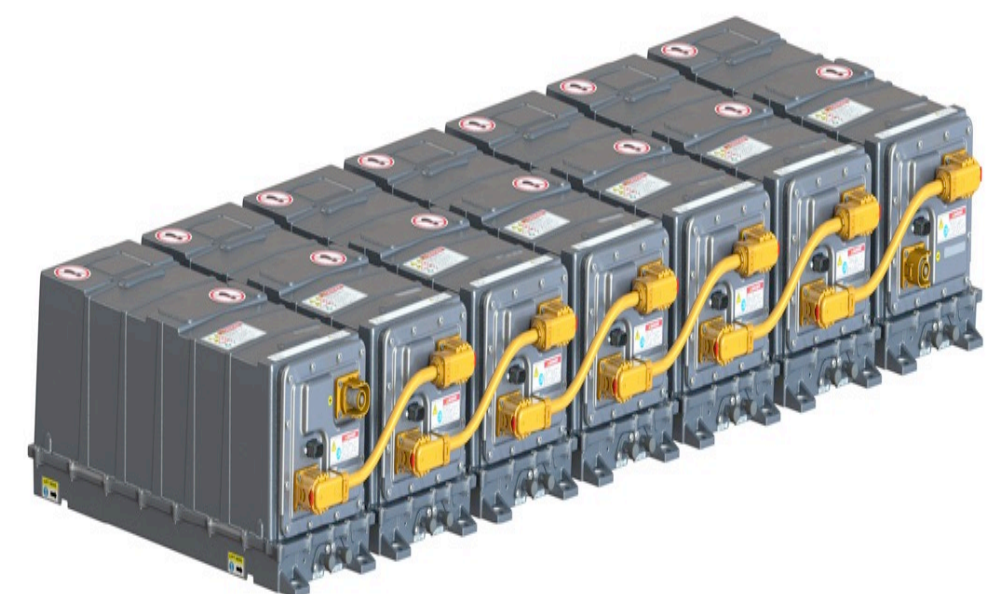


The Port of Los Angeles has installed a charging system at Pacific Harbor Line's facility as a cost-share contribution to this project. VeRail is providing a significant portion of the battery costs, while the Port of Long Beach and the South Coast Air Quality Management District are each providing support for the assembly of the locomotive and the battery control computers.

**Dates:** 06/01/2018 – Spring 2020  
**Grantee:** Port of Los Angeles  
**Partners:** VeRail Technologies, Inc., Pacific Harbor Line, South Coast Air Quality Management District, Port of Long Beach  
**Grant Amount:**  
CARB Contribution: \$2,678,830  
Matching Funds: \$1,064,320  
Project Total: \$3,833,150



Stripped-down Locomotive



Battery Module – Promotional Art

## Vehicles/Equipment Funded

- 1 EMD SD40 locomotive frame, stripped of original power system;
- Twelve 233kW battery modules, totaling 2.8 MWh of storage capacity;
- Completely redesigned cooling system; and
- Battery mounting system and control computer.

## Lessons Learned

- Federal regulations require rigorous preliminary modeling prior to the construction of a natural gas powered locomotive, which ultimately inspired the transition to the full battery electric locomotive.
- Anticipate extra time to determine the responsible party for the purposes of insurance indemnification .
- Anticipate extra time for subsequent subrecipient agreements.

## Status Updates

- Project team selected a different battery manufacturer than originally intended, allowing for significantly more battery capability than originally planned.
- The locomotive has been prepared for installation.
- Challenges in contracting and changes to project team have delayed construction.

